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10/798,134

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Andrew Jay Skoog

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EXAMINER

SAVAGE, JASON L

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/798,134	<b>Applicant(s)</b> SKOOG ET AL.	
	<b>Examiner</b> JASON L. SAVAGE	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9,11,12,14 and 17-24 is/are pending in the application.
- 4a) Of the above claim(s) 21-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9,11,12,14 and 17-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Election/Restrictions***

Newly submitted claims 21-24 are directed to an invention that is an independent or distinct species from the invention originally claimed for the following reasons:

This application contains claims directed to the following patentably distinct species:

A) Claims 1-2, 4-9, 11-12, 14 and 17-20 drawn to a method of applying a powder coating comprising a fritted glass matrix with ceramic particles trapped in the matrix.

B) Claims 21-22 drawn to a method of applying a powder coating comprising an organic material.

C) Claims 23-24 drawn to a method of applying a powder coating comprising a ceramic matrix admixed with metal,

The species are independent or distinct because claims to the different species recite the mutually exclusive characteristics of such species. In addition, these species are not obvious variants of each other based on the current record.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for

prosecution on the merits. Accordingly, claims 21-24 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 4-9, 11-12, 14 and 17-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding the limitations in claims 1 and 12 that “heating the applied composition to only one temperature” and “heating to the only one temperature melts and fuses particles”, the Examiner could not find a basis to limit the invention to exclude other processes which employ more than one heating step to cause the glass and ceramic particles to react. As such, the claim limitations are considered to contain new matter not supported by the original disclosure.

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 17-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Andrus et al (US 5,250,360).

Andrus teaches a method of forming protective coatings on turbine engine components (col. 1, ln. 4-28). Andrus teaches the powder coating material is powdered glass frits having ceramic materials trapped within the glass matrix (col. 8, ln. 33–50). Andrus further teaches the method of forming the coating is electrostatically spraying a dry powder coating material directly onto the component body surface (col. 6, ln. 27-36). Andrus teaches the applied coating is fired at a temperature above 1000°C causing the glass and ceramic to react to form a fused and cured crystalline coating (col. 6, ln. 37-47).

Regarding the limitation that the heating of the applied powder coating to “only one temperature” (emphasis added), although Andrus teaches a two stage heating

process to initially soften the glass particles prior to the subsequent step which reacts and fused the particles, the Examples of Andrus are heated to only one temperature (Tables III-IV and col. 11, ln. 47-59). As further evidence of the heating being performed in a single step, Andrus teaches the glass coating is fired in one temperature range (col. 2, ln. 15-19). As such, Andrus would meet the limitation that powder coating materials are heated by firing to only one temperature to react the coating materials.

In the alternative, firing a powder coating to melt and fuse the particles by heating to only one temperature is well known. It would have been obvious to one of ordinary skill in the art at the time of the invention to have recognized that other processing parameters could be employed with a reasonable expectation of success forming a protective coating on turbine engines such as described by Andrus.

Regarding the limitation that the reacted powder phase would raise the melting point of the coating, since Andrus teaches the same method and same material, it is the position of the Examiner that the claimed raised melting temperature would be inherent. The Patent and Trademark Office can require Applicant to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on Applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 U.S.P.Q. 431 (CCPA 1977).

Regarding claim 17, Andrus teaches the powder is applied directly to the gas turbine engine substrate component (col. 8, ln. 55-68).

Regarding claim 18, Andrus teaches that electrostatic spraying may be used to apply the powder coating material to the substrate (col. 6, ln. 27-36).

Claims 11-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrus et al (US 5,250,360).

Regarding claim 11, although Andrus does not explicitly recite the substrate in the turbine component is non-metallic, it would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that a wide variety of materials could be employed with a reasonable expectation of success including non-metallic substrates such as is claimed.

Regarding claim 12, Andrus meets the claim limitations however it does not explicitly recite that the gas turbine is cleaned prior to application of the powder coating. However, it would have been obvious to one of ordinary skill to have cleaned the substrate prior to applying the powder coating to insure the coating could suitably adhere to the substrate surface.

Regarding claim 14, Andrus teaches multiple embodiments wherein the heating temperature is between 1100-1200°C for approximately 0.5-1 hour (Table III).

Regarding claims 19-20, although Andrus does not exemplify an embodiment wherein the heating time is less than 15 minutes, it would have been within the purview of one of ordinary skill in the art to have heated the coating of Andrus for longer or

shorter times so as to provide a coating with suitable properties for the application in which it is intended to be used. Absent a teaching of the criticality or showing of unexpected results from the heating step being limited to 15 minutes or less, it would not provide a patentable distinction over the prior art.

Claims 2 and 4-9 are rejected under 35 U.S.C. 103(a) as obvious over Andrus et al (US 5,250,360) in view of either Daly et al (US 2004/0068027) or Ilenda et al. (US 2004/0063817).

Regarding the limitation in claim 2 that the powder coating is applied using a fluidized bed or an electrostatic brush, although Andrus does not teach the claimed processes, it teaches that the powder coating material may be applied in any conventional manner (col. 6, ln. 27-29).

Daly teaches powder coatings which are readily applied using little or no organic solvents (par [0002]). Daly further teaches that electrostatically deposited the coatings conventionally applying the coating material using a fluidized bed, a magnetic brush or spray nozzle (par[0053]).

Ilenda teaches powder coatings having enhanced properties (par [0001-0002]). Ilenda further teaches that conventional methods for deposited powder coatings include using electrostatic spraying, a fluidized bed or a magnetic brush (par[0108]).

As such, it would have been obvious to one of ordinary skill in the art to have used any conventional deposition process including electrostatic spray, fluidized bed or



magnetic brush applications with a reasonable expectation of success of forming the powder coating of Andrus.

Regarding claim 4, Andrus teaches that the turbine body is electrically grounded (col. 6, ln. 32-33). In the alternative, it would have been obvious to have grounded the substrate body.

Regarding claims 5-7, Andrus teaches that the coatings may contain the claimed materials (col. 5, ln. 62 – col. 6, ln. 26).

Regarding claim 8, the coating of Andrus meets the limitation of being a thermal barrier.

Regarding claim 9, Andrus is silent to the component body being cleaned prior to the application of the coating. However, it would have been obvious to one of ordinary skill to have cleaned the substrate prior to applying the powder coating to insure the coating could suitably adhere to the substrate surface.

### ***Response to Arguments***

Applicant's arguments filed 12-26-07 have been fully considered but they are not persuasive.

Applicant argues that Andrus teaches that the glass powder-coated metal body is heated to two different temperatures and concludes that the second, higher temperature effects development of the crystal phase according to Andrus. Applicant recites that in contrast, the applied powder of the present invention is heated to only one temperature. Applicant states that the melting point can thus be raised without softening of the matrix.

However, as noted in the rejection to the claims under 35 USC 112, the newly added claim limitation of only one temperature is considered new matter. With respect to Andrus, as recited in the rejections above, the Examples of Andrus are heated to only one temperature (Tables III-IV and col. 11, ln. 47-59). As further evidence of the heating being performed in a single step, Andrus teaches the glass coating is fired in one temperature range (col. 2, ln. 15-19). As such, Andrus would meet the limitation that powder coating materials are heated by firing to only one temperature to react the coating materials.

In the alternative, firing a powder coating to melt and fuse the particles by heating to only one temperature is well known. It would have been obvious to one of ordinary skill in the art at the time of the invention to have recognized that other processing parameters could be employed with a reasonable expectation of success forming a protective coating on turbine engines such as described by Andrus.

Applicant further argues that the skilled artisan would not be motivated to look to Ilenda or Daly for guidance since they are drawn to different subject matter from Andrus and do not recite any method of coating a gas turbine engine. However, Ilenda and Daly are merely provided to show that the claimed methods of applying electrostatic coatings are known. Since Andrus teaches that the powder coating may be applied by any conventional matter, it would have been obvious to one of ordinary skill in the art to have used conventional methods of applying an electrostatic powder coating such as those taught in Daly or Ilenda with a reasonable expectation of success. It is well settled that the test of obviousness is not whether the features of one reference can be

bodily incorporated into the structure of another and proper inquiry should not be limited to the specific structure shown by the references, but should be into the concepts fairly contained therein, and the overriding question to be determined is whether those concepts would suggest to one of ordinary skill in the art the modifications called for by the claims, *In re Van Beckum*, 169 USPQ 47 (CCPA 1971), *In re Bozek*, 163 USPQ 545 (CCPA 1969); *In re Richman*, 165 USPQ 509 (CCPA 1970); *In re Henley*, 112 USPQ 56 (CCPA 1956); *In re Sneed*, 218 USPQ 385 (Fed. Cir. 1983).

In response to the issue whether the reference is nonanalogous art, it has been held that the determination that a reference is from a nonanalogous art is twofold. First, one decides if the reference is within the field of the inventor's endeavor. If it is not, one proceeds to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved, *In re Wood*, 202 USPQ 171, 174. In the instant case, Andrus, Daly and Ilenda are drawn to methods of applying powder coatings by electrostatic deposition methods.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON L. SAVAGE whose telephone number is (571)272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Savage/  
4-10-08

/KEITH D. HENDRICKS/  
Supervisory Patent Examiner, Art Unit 1794